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Verbal Perseveration and Related Disorders in Primary Degenerative Dementia

by

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Increasing attention was paid recently to the language impairments occurring in patients with primary degenerative dementia(s) (Hamanaka 1986). This study, being a supplement to our previous investigation on paraphasia and related disorders in them (Hamanaka et al. 1985), intends to clarify the nature of verbal perseverative responses observed in their naming behaviour.

SUBJECTS AND METHODS

The sample consists of 15 right-handed patients diagnosed as suffering from primary degenerative dementia of mild or moderate degree. Subjects characteristics (sex, age at onset, clinical diagnosis, and duration of the disease) are described in Table 1. For clinical differential diagnosis, the criteria of Hachinski et al. (1975) were adopted to exclude multi-infarct dementia.

Each patient was asked a set of 20 black- and-white 6×6 cm. drawings of objects which derives from the Standard Language Test for Aphasia (SLTA: Hasegawa et al. 1977). Naming each item was given 15 sec. 6 out of 15 patients were tested more than two times (max. 6 times) during the progressive course of the disease followed up to max. 3.8 years after the first examination (Table 1) with an interval of 3 to 6 months. All verbal responses were tape-recorded and transcribed into written material, in order to be analysed with regard to verbal perseverations.

Verbal perseverative responses were classified according to the following taxonomy (Table 2). (1) "Perseveration post-stimulus of delayed type (PPSD)" is an inappropriate repetition of some prior response after one or more tasks having intervened. (2) "Perseveration post-stimulus of immediate type (PPSI)" is defined as an inappropriate repetition of a response that occurred in the immediately preceding task. (3) "Perseveration post-response (PPR)" occurred within the same task after one or more verbal responses having intervened. (4) In "continuous repetition (CP)" a word or a phrase is repeated more than once continuously, i.e. without

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Table 1.

Case No. -(Test No.)	Aetiolo- gy	A.O. /SEX	Dur. of ill.	Correct *	Stutt- ering *	Conti. Repeti. *	p. pR. *	p. pS. immed. *	p. p.S delay. (**)
# 1-2			1, 6	1.00					
# 2-(1)	Alz	73 M	3, 0	.95					
# 3-(1)	Alz	45 F	2, 5	.95	0.15	0.05			
# 1-1	Alz	52 F	1, 0	.90		0.10			
# 4-(1)	Alz	73 F	1, 5	.70		0.05	0.40		
# 5-1	Pi	46 M	0, 6	.65			0.05		
# 5-2			0, 9	.60			0.10		0.15(0.15)
# 1-3			2, 0	.60			0.05	0.15	0.15(0.05)
# 6-(1)	Alz	58 F	2, 0	.60			0.05		
# 7-(1)	Alz	77 M	1, 6	.50					0.05(0.05)
# 8-1	Alz	64 F	2, 5	.50	0.20		0.40	0.05	
# 8-2			2, 8	.50					
# 8-4			3, 7	.45			0.15		
# 9-1	Alz	56 F	2, 6	.40					
# 8-3			3, 2	.35					
# 10-1	Pi	56 F	1, 5	.35					0.05(0.05)
# 11-(1)	Pi	58 M	2, 0	.35			0.05		
# 12-(1)	Alz	66 F	3, 0	.35		0.05			0.10(0.05)
# 13-2			1, 0	.35		0.07	0.14	0.07	
# 13-1	Alz	62 M	0, 5	.35			0.10		
# 10-2	Alz	55 M	2, 0	.30	0.05	0.05			
# 10-3			2, 5	.25	0.05				
# 10-4			3, 1	.20					
# 10-5			3, 7	.20	0.06				
# 10-6			4, 6	.20			0.05	0.05	0.10(0.05)
# 1-4			2, 9	.15				0.05	
# 9-2			3, 5	.05			0.20		0.30(0.20)
# 8-5			5, 8	.05			0.23	0.11	
# 8-6			6, 3	.00		0.10	0.20		
# 14-(1)			11, 0	.00		0.20	0.60	0.40	
# 15-(1)	Pi	61 F	2, 5	.00	0.05		0.05	0.15	0.15(0.00)

* Frequency per item (e.g. 1.00=20 correct responses/20 items)

** The numbers in parenthesis indicate frequency per item of perseveration-post-Stimulus(delayed type)-responses which are paradigmatically related to the target word.

Alz: Alzheimer's disease SDAT: senile dementia of Alzheimer type Pi: Pick's disease A.O.: Age of onset Dur. of ill.: Duration of illness Conti. Repeti.: Continuous Repetition p.pR.: perseveration post-Response p.pS. immed.: perseveration post-Stimulus of immediate type p.p.S. delay.: perseverationpost-Stimulus of delayed type.

intervening responses. (5) "Stuttering" (ST) is a continuous repetition, not of a word, a phrase or their fragment, but of one syllable. This descriptive taxonomy, contrasting with those of some authors (Buckingham et al. 1979; Yamadori 1981; Fuld et al. 1982; Schindler et al. 1985; Table 3), corresponds to those of Bayles et al. (1985) with some modifications. The classifications proposed by

Table 2.

Stimulus → Response

book → Is this a notebook? I can't see.	① PPSD
It may be a <i>notebook</i> ③. Aha, book.	② PPSI
pencil → It's a <i>book</i> ②. Or a pencil?	③ PPR
dog → rabbit, <i>rabbit</i> ④, <i>rabbit</i> ④.	④ CP
watch → It's a <i>pencil</i> ①.	

Table 3. Taxonomy of perseveration (linguistic aspect)

1979 Buckingham		iterative p.		discontinuous p.	
1981 Yamadori				immediate p.	delayed p.
1982 Fuld					intrusion
1984 Schindler					intrusion
1985 Bayles	continuous p.		ideational p. post-R.	ideational p. post-S.	
1986 Kanemoto	stuttering	continuous p.	p. post-R.	p. post-S. immediate	p. post-S. delayed

p: perseveration R.: Response S.: Stimulus

Luria (1965), Freeman et al. (1966), Helmick et al. (1976) and Sandson et al. (1984) was also taken into consideration.

RESULTS

(1) The occurrence of any type of perseverative responses does not always correlate with the severity of naming difficulty, indicated by the reduced number of correct responses.

(2) PPR is the most common of perseverative responses observed in some one or more phases of 11 out of 15 cases: (73,3%: # 1,4,5,6,8,9,10,11,13,14,15). The amount of PPR increased in some degree, along with progressive naming difficulty, in one patient (# 5), but not in another (# 8) who was tested most repeatedly.

(3) PPSI, observed in 6 cases (40%: # 1,8,10,13,14,15), was always accompanied with PPR, with exception of one of them in one test (# 1-4). In one patient (# 8) exhibiting PPSI in 2 of 6 tests, some increase in the amount of PPSI was noted.

(4) PPSD was confirmed in 7 cases (46,7%: # 1,5,7,9,10,12,15), occurring in every case in accompaniment of PPR, apart from one (# 7), but not always in the same test. It deserves special attention that no PPSD was elicited in one patient (# 8) who exhibited PPSI in association with PPR in more than one test, whereas neither PPSI nor PPR was observed in another (# 7) who produced PPSD. In one patient (# 10), who was tested repeatedly, the amount of PPSD exhibited some tendency to increase during the course of the disease.

(5) As to the nature of PPSD, it is to be emphasized that the word, that was produced in perseveration, was semantically related to the target word in 62% of all the PPSD-responses elicited in 7 cases. In these responses, for example, the drawing of a "deer" was named "dog", after the drawing of a "dog" had been correctly named in one of the preceding tasks. Moreover the "distance", i.e. the number of tasks intervening between each task on the one hand, which elicited a PPSD-response, and the preceding task on the other, in which the perseverated word had been initially produced, was different in the PPSD-responses with semantic association (6,2) and in those without it (3, 4).

(6) ST and CP occurred obviously in independence not only of one another, but also of PPR, PPSI and PPSD.

COMMENTS

The results obtained suggest that each type of perseverative responses is produced on the basis of, at least partially, different mechanisms from each other, except that PPR and PPSI derive possibly from some common process(es), because PPSI is accompanied as a rule by PPR. Since PPR occurs more frequently than PPSI, it is probable that PPSI represents a more severe impairment than PPR. This result coincides with that of Bayles et al. (1985) who examined dementia patients by analyzing the content of their verbal descriptive discourse.

Schwarz et al. (1979) pointed out that their patient suffering from a progressive dementing disease "consistently over-extended verbal labels to closely associated distractors." Martin et al. (1983) claimed more clearly that "Alzheimer's disease may lead to a specific disruption of semantic knowledge characterized by a difficulty in differentiating between items within the same semantic category concurrent with the relative preservation of broader categorical information." The result obtained by us, that namely those PPSD-responses which were elicited on presentation of the stimulus belonging to the same semantic category as themselves amounted to the two thirds of the total PPSD-responses, could be interpreted to suggest that PPSD responses might be caused, in part at least, due to the "difficulty in differentiating between items within the same semantic category." Moreover a considerable difference observed between semantically related and not-related PPSD-responses with regard to the number of intervening stimuli suggests that PPSD consists possibly of two different sub types of perseverative phenomena.

SUMMARY

Analysis of verbal perseverative responses on a confrontation naming task administered to 15 cases of primary degenerative dementia yielded the following results: (1) two types of verbal perseveration, namely that which occurs in the course of naming one and the same item, and that which is elicited in the immediately following task of naming, derive possibly from some common underlying mechanism,

whereas other types of verbal perseveration and repetition are caused by neuropsychological processes different from one another, (2) one of the latter types of perseveration, namely "intrusion" which is produced with one or more naming tasks having intervened, may consist of two distinct subtypes of verbal perseveration, one of which is characterized by semantic confusion with its target word.

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